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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/022,869	12/20/2001	Kenichi Ishida	107101-00038	6259

7590 10/30/2003

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EXAMINER

DOLE, TIMOTHY J

ART UNIT	PAPER NUMBER
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2858

DATE MAILED: 10/30/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/022,869

Applicant(s)

ISHIDA ET AL.

Examiner

Timothy J. Dole

Art Unit

2858

MW

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 August 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Allowable Subject Matter

1. The indicated allowability of claims 13-16 is withdrawn in view of the newly discovered reference(s) to Nakata et al. Rejections based on the newly cited reference(s) follow.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 9, 13 and 17-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Nakata et al.

Referring to claims 1, 9, 13 and 17, Nakata et al. discloses a system and method for detecting misfire for an internal combustion engine having an ignition plug (fig. 1 (4)), installed to face into a combustion chamber of a cylinder of the engine and connected to an ignition coil (fig. 1 (1)), which produces spark discharge when supplied with discharge current from the ignition coil to ignite air-fuel mixture in the combustion chamber; comprising: a current detection circuit (fig. 1 (10)) which detects ionization current (fig. 4C), that flows following the discharge current (fig. 4B), during a period (fig. 4D); a misfire detector (fig. 1 (20)) which detects occurrence of misfire of the engine based on the detected current (column 7, lines 10-21); and a processing delay circuit (fig.

1 (20)) which inputs at least one of the discharge current (fig. 4B) and the ionization current (fig. 4C) and based on the inputted current, delays starting of the period by a time point which is not earlier than termination of the discharge current (fig. 4D).

Referring to claim 18, Nakata et al. discloses the method as claimed wherein the step (c) inputs the ionization current (fig. 4C) and delays the period (fig. 4D) by the time since the ionization current begins to flow.

Referring to claim 19, Nakata et al. discloses the method as claimed wherein the step (c) determines the period (fig. 4D) based on flow of the ionization current (fig. 4C).

Referring to claim 20, Nakata et al. discloses the method as claimed wherein the step (c) inputs the discharge current (fig. 4B) and delays the period (fig. 4D) by a time since the discharge current terminates to flow.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 2-8, 10-12 and 14-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakata et al. in view of Noel.

Referring to claims 2, 10 and 14, Nakata et al. discloses the system as claimed except wherein the processing delay circuit includes: a comparator which inputs the current to compare with a reference value and produces an output indicative of at least

starting of the period, and a capacitor provided before the comparator which delays inputting of the current to the comparator such that the starting of the period is delayed by the time.

Noel discloses a misfire detection system wherein the processing delay circuit (fig. 1 (44)) includes: a comparator (fig. 2A (70)) which inputs the current to compare with a reference value (fig. 2A (Vref)) and produces an output (fig. 2A (pre-ignition signal)) indicative of at least starting of the period, and a capacitor (fig. 2B (76)) provided before the comparator which delays inputting of the current to the comparator such that the starting of the period is delayed by the time.

Therefore, it would have been obvious to one skilled in the art at the time of the invention to incorporate the delay circuitry of Noel into the system of Nakata et al. for the purpose of providing an exemplary embodiment of the processing circuit to perform the appropriate functions (column 5, lines 12-13).

Referring to claims 3, 11 and 15, Nakata et al. discloses the system as claimed except wherein the processing delay circuit includes: a comparator (fig. 2A (70)) which inputs the current to compare with a reference value (fig. 2A (Vref)) and produces an output (fig. 2A (pre-ignition signal)) indicative of at least starting of the period, and a reference value supply circuit (fig. 2A (Vref)) which varies the reference value to delay producing of the output of the comparator such that the starting of the period is delayed by the time (column 5, lines 17-19). It should be noted that Vref is a predetermined value, which implies that it is a value that can be set or changed as deemed necessary for controlling the delay time.

Noel discloses the processing delay circuit includes: a comparator (fig. 2A (70)) which inputs the current to compare with a reference value (fig. 2A (Vref)) and produces an output (fig. 2A (pre-ignition signal)) indicative of at least starting of the period, and a reference value supply circuit (fig. 2A (Vref)) which varies the reference value to delay producing of the output of the comparator such that the starting of the period is delayed by the time (column 5, lines 17-19). It should be noted that Vref is a predetermined value, which implies that it is a value that can be set or changed as deemed necessary for controlling the delay time.

Therefore, it would have been obvious to one skilled in the art at the time of the invention to incorporate the delay circuitry of Noel into the system of Nakata et al. for the same purpose as given in claim 2, above.

Referring to claim 4, Nakata et al. discloses the system as claimed wherein the comparator inputs the ionization current (fig. 4C) and produces the output indicative of the starting and ending of the period (fig. 4D).

Referring to claim 5, Nakata et al. discloses the system as claimed except for a comparator which inputs the ionization current to be compared with a reference value and produces the output indicative of the starting and ending of the period.

Noel discloses a comparator (fig. 2A (70)) which inputs the ionization current to be compared with a reference value and produces the output indicative of the starting and ending of the period (column 5, lines 12-22).

Therefore, it would have been obvious to one skilled in the art at the time of the invention to incorporate the delay circuitry of Noel into the system of Nakata et al. for the same purpose as given in claim 2, above.

Referring to claims 6 and 7, Nakata et al. discloses the system as claimed wherein the comparator inputs the discharge current (fig. 4B) and produces the output indicative of the starting of the period (fig. 4D).

Referring to claims 8, 12 and 16, Nakata et al. discloses the system as claimed except wherein the current detection circuit includes an integration capacitor to be charged by the ionization current, and the misfire detector detects the occurrence of misfire of the engine based on an output of the integration capacitor.

Noel discloses the current detection circuit includes an integration capacitor (fig. 2B (76)) to be charged by the ionization current (column 5, lines 23-34), and the misfire detector detects the occurrence of misfire of the engine based on an output of the integration capacitor (column 5, lines 12-22).

Therefore, it would have been obvious to one skilled in the art at the time of the invention to incorporate the circuitry of Noel into the system of Nakata et al. for the same purpose as given in claim 2, above.

Response to Arguments

5. Applicant's arguments with respect to claims 1, 9 and 17 have been considered but are moot in view of the new ground(s) of rejection.

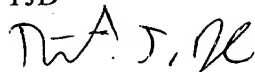
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy J. Dole whose telephone number is 703-305-7396. The examiner can normally be reached on Mon. thru Fri. from 8:00 to 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, N. Le can be reached on 703-308-0750. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

TJD



N. Le
Supervisory Patent Examiner
Technology Center 2800